

# □ MN101E29 Series

Type	MN101E29G	MN101EF29G
Internal ROM type	Mask ROM	FLASH
ROM (byte)	128K	128K+4K
RAM (byte)	6K	
Package (Lead-free)	LQFP100-P-1414, QFP100-P-1818B	
Minimum Instruction Execution Time	50 ns (at 2.2 V to 5.5 V, 20 MHz) *: at internal 2, 3, 4, 5, 6, 8, 10 times oscillation used	

## ■ Interrupts

6 external interrupts. 28 internal interrupts

RESET. NMI. External 0 to 4. Timer 0 to 4. Timer 6. Timer 7 (2 systems). Timer 8 (2 systems). Timer 9 (2 systems). Time base. Serial 0 (2 systems). Serial 1 (2 systems). Serial 2 (2 systems). Serial 3 (2 systems). Serial 4. Serial 5. A/D conversion. Automatic transfer (2 systems). Key interrupt

## ■ Timer Counter

8-bit timer × 7

Timer 0 .....Timer pulse output. Event count. Added pulse (2-bit) type PWM output. Remote control carrier output. Simple pulse width measurement. Real time output control

Timer 1 .....Timer pulse output. Event count. 16-bit cascade connected (timer 0, 1). Timer synchronous output

Timer 2 .....Timer pulse output. Event count. Added pulse (2-bit) type PWM output. Simple pulse width measurement. 24-bit cascade connected (timer 0, 1, 2). Timer synchronous output. Real time output control

Timer 3 .....Timer pulse output. Event count. Remote control carrier output. 16-bit cascade connected (timer 2, 3). 32-bit cascade connected (timer 0, 1, 2, 3)

Timer 4 .....Timer pulse output. Added pulse (2-bit) type PWM output. Event count. Serial transfer clock output. Simple pulse width measurement

Timer 6 .....8-bit freerun timer. Time base timer

Timer A .....Event count. Baud rate timer. Clock output for peripheral function

16-bit timer × 3

Timer 7 .....Timer pulse output. Event count. High accuracy PWM. High performance IGBT output (cycle/duty continuous variable). Timer synchronous output. Input capture (both edge available). Real time output control. Double buffer compare register

Timer 8 .....Timer pulse output. Event count. High accuracy PWM output (cycle/duty continuous variable). Pulse width measurement. Input capture (both edge available). 32-bit cascade connected (timer 7, 8). 32-bit PWM output. Synchronous output event. Double buffer compare register

Timer 9 .....Timer pulse output. Event count. High accuracy PWM output (cycle/duty continuous variable). Pulse width measurement. Input capture (both edge available). Real time output control. Double buffer compare register

Watchdog timer × 1

## ■ Serial interface

Synchronous type/UART (full-duplex) × 4: Serial 0 to 3

Synchronous type/Multi-master I<sup>2</sup>C × 1: Serial 4

I<sup>2</sup>C slave × 1: Serial 5

## ■ DMA controller

2 systems. Maximum transfer cycles are 255

Starting factor: External request. Internal event. Software

## ■ I/O Pins

I/O 90 : Common use. Specified pull-up/pull-down resistor available. Input/output selectable (bit unit)

## ■ A/D converter

10-bit × 16 channels

## ■ D/A converter

8-bit × 4 channels

## ■ Display control function

LCD: 55 segments × 4 commons (Static, 1/2, 1/3, or 1/4 duty) 1/3 bias

Usable if  $V_{LC1} \leq V_{DD}$

■ Special Ports

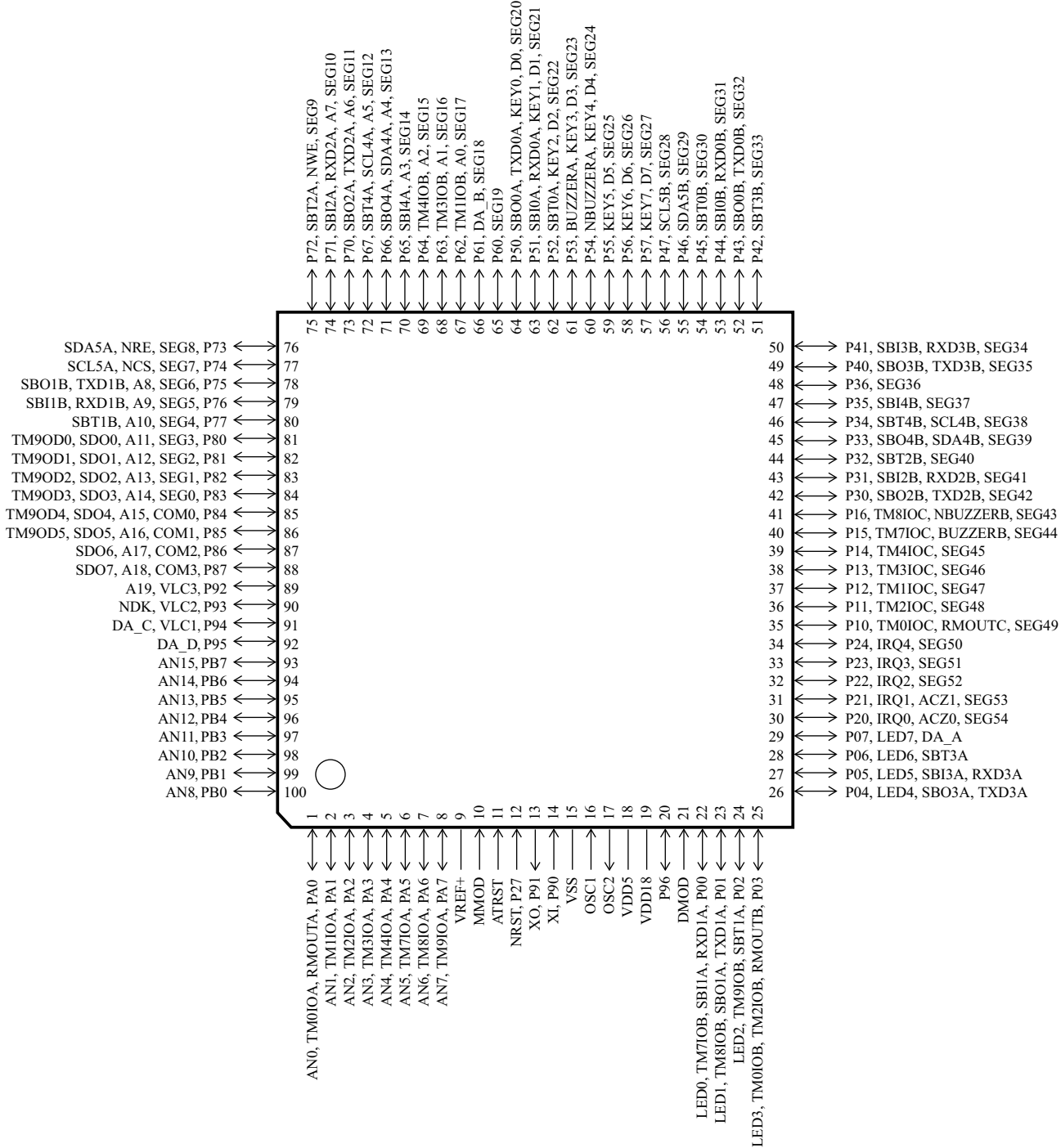
Buzzer output. Inverted buzzer output. Remote control carrier output. High-current drive port

■ ROM Correction

Correcting address designation: Up to 7 addresses possible

■ Pin Assignment

LQFP100-P-1414, QFP100-P-1818B



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